

What is claimed is:

1. A vertical cavity surface emitting laser (VCSEL), comprising:  
at least one quantum well having a depth of at least 40 meV and comprised of InGaAsSb;  
barrier layers sandwiching said at least one quantum well; and  
confinement layers sandwiching said barrier layers.
2. The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsN.
3. The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.
4. The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.
5. The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.
6. The VCSEL of claim 1 wherein said quantum well is up to and including 50 Å in thickness.
7. The VCSEL of claim 2 wherein said confinement layers are comprised of AlGaAs.
8. The VCSEL of claim 7 wherein said quantum well is up to and including 50 Å in thickness.
9. The VCSEL of claim 3 wherein said confinement layers are comprised of AlGaAs.

10. The VCSEL of claim 9 wherein said quantum well is up to and including 50 Å in thickness.

11. The VCSEL of claim 4 wherein said confinement layers are comprised of AlGaAs.

12. The VCSEL of claim 11 wherein said quantum well is up to and including 50 Å in thickness.

13. The VCSEL of claim 1 wherein said at least one quantum well further comprises >1% N.

14. The VCSEL of claim 13 wherein said quantum well is up to and including 50 Å in thickness.

15. The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsN.

16. The VCSEL of claim 15 wherein said quantum well is up to and including 50 Å in thickness.

17. The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsP.

18. The VCSEL of claim 17 wherein said quantum well is up to and including 50 Å in thickness.

19. The VCSEL of claim 13 wherein said barrier layers are comprised of AlGaAs.

20. The VCSEL of claim 19 wherein said quantum well is up to and including 50 Å in thickness.

21. The VCSEL of claim 13 wherein said confinement layers are comprised of AlGaAs.

22. The VCSEL of claim 21 wherein said quantum well is up to and including 50 Å in thickness.

23. The VCSEL of claim 15 wherein said confinement layers are comprised of AlGaAs.

24. The VCSEL of claim 23 wherein said quantum well is up to and including 50 Å in thickness.

25. The VCSEL of claim 17 wherein said confinement layers are comprised of AlGaAs.

26. The VCSEL of claim 25 wherein said quantum well is up to and including 50 Å in thickness.

27. The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

28. The VCSEL of claim 27 wherein said quantum well is up to and including 50 Å in thickness.

29. The VCSEL of claim 1 wherein said at least one quantum well further comprises N.

30. The VCSEL of claim 29 wherein said quantum well is up to and including 50 Å in thickness.

31. The VCSEL of claim 29 wherein said barrier layers are comprised of GaAsN.

32. The VCSEL of claim 31 wherein said quantum well is up to and including 50 Å in thickness.

33 ~~32~~. The VCSEL of claim 29 wherein said barrier layers are comprised of GaAsP.

34 ~~33~~. The VCSEL of claim 32 wherein said quantum well is up to and including 50 Å in thickness.

35 ~~34~~. The VCSEL of claim 29 wherein said barrier layers are comprised of AlGaAs.

36 ~~35~~. The VCSEL of claim 34 wherein said quantum well is up to and including 50 Å in thickness.

37 ~~36~~. The VCSEL of claim 29 wherein said confinement layers are comprised of AlGaAs.

38 ~~37~~. The VCSEL of claim 36 wherein said quantum well is up to and including 50 Å in thickness.

39 ~~38~~. The VCSEL of claim 31 wherein said confinement layers are comprised of AlGaAs.

40 ~~39~~. The VCSEL of claim 38 wherein said quantum well is up to and including 50 Å in thickness.

41 ~~40~~. The VCSEL of claim 34 wherein said confinement layers are  
comprised of AlGaAs.

42. The VCSEL of claim 40 wherein said quantum well is up to and including 50 Å in thickness.

42. The VCSEL of claim 36 wherein said confinement layers are comprised of AlGaAs.

43. The VCSEL of claim 42 wherein said quantum well is up to and including 50 Å in thickness.